

**Colonial Nesting Bird Survey  
on the  
Bureau of Land Management  
Lewistown District: 1996**

A Report to:

Bureau of Land Management

Lewistown District  
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March 1997

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## 8 1998 Montana Natural Heritage Program

This document should be cited as follows:

Feighley, H. P. 1998. Colonial nesting bird survey on the Bureau of Land Management Lewistown District: 1996. Montana Natural Heritage Program. Helena, MT. 27 pp.

## ABSTRACT

A total of 132 lakes, reservoirs, and ponds were surveyed on the Lewistown District of the Bureau of Land Management. Surveys were conducted by one or two individuals between 3 June and 25 July 1996. The duration of the surveys ranged between 1 – 180 person-minutes and consisted of a search of the wetland with binoculars and/or spotting scope for adult birds or nests. If adults were seen, an effort was made to determine 1) numbers present; and 2) breeding status. Nine species of colonial nesting shore- and waterbird were detected: American White Pelican (*Pelecanus erythrorhynchos*), Black-crowned Night-Heron (*Nycticorax nycticorax*), Double-crested Cormorant (*Phalacrocorax auritus*), Black Tern (*Chlidonias niger*), Common Tern (*Sterna hirundo*), Forster's Tern (*Sterna forsteri*), California Gull (*Larus californicus*), Franklin's Gull (*Larus pipixcan*), and Ring-billed Gull (*Larus delawarensis*). All, but American White Pelican and Franklin's Gull, were documented as breeding or probable breeding at one or more sites. Verified or probable nesting by 1 or more species of colonial waterbird was identified at 19 (14%) sites. Breeding colonies of Double Crested Cormorant, Black-crowned Night-Heron and California Gull were found at only one site each. Breeding or probable breeding colonies at multiple sites were recorded for Ring-billed Gull (4 sites), Common Tern (7 sites), Forster's Tern (5 sites) and Black Tern (5 sites). Most (68%) occupied sites were larger than 100 acres, with only one less than 30 acres. Pooled 1995 and 1996 survey data indicated that colonial nesters tended to be associated with larger sites ( $\geq 40$  acres). Seventy-eight percent of occupied sites had emergent vegetation along more than 25 % of the shoreline and permanent bodies of water accounted for 83% of the occupied sites.

Other TES or "watch-list" bird species encountered during the surveys were Common Loon (*Gavia immer*), Loggerhead Shrike (*Lanius ludovicianus*), Baird's Sparrow (*Ammodramus bairdii*) and Peregrine Falcon (*Falco peregrinus*). In addition, four amphibian and three reptile species were observed: tiger salamander (*Ambystoma tigrinum*), western chorus frog (*Pseudacris triseriata*), northern leopard frog (*Rana pipiens*), plains spadefoot (*Scaphiopus bombifrons*), painted turtle (*Chrysemys picta*), western terrestrial garter snake (*Thamnophis elegans*) and plains garter snake (*Thamnophis radix*).

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## **ACKNOWLEDGEMENTS**

Financial support for this project came from the Lewistown District of the Bureau of Land Management and the Montana Natural Heritage Program (Montana State Library, Natural Resource Information System and The Nature Conservancy). Field surveys were conducted by Paul Hendricks and the late Jim Reichel. Jim Reichel had performed the initial synthesis of the data. Cedron Jones, John Hinshaw, Martin Miller and Janice Miller assisted with data entry/management and Map preparation. This report is dedicated to the memory of Jim Reichel, whose expertise, enthusiasm and dedication greatly advanced our knowledge of birds in Montana.

## INTRODUCTION

Due to the aggregation of nests in relatively small areas, colonial nesting birds are particularly sensitive to disturbance. Disease or man-made and natural disturbances resulting in habitat alterations can devastate colonies of nesting birds. Some species of colonial nesting birds have experienced population declines and/or range reductions (Dunn and Argo 1995, Burger and Gochfeld 1994, Knopf 1994, Evans and Knopf 1993). Because of their sensitivity, many colonial nesting shore- and waterbirds are considered species of special concern by various agencies and programs.

The Montana Natural Heritage Program lists Clarke's Grebe (*Aechmophorus clarkii*), American White Pelican (*Pelecanus erythrorhynchos*), White-faced Ibis (*Plegadis chihi*), Black-crowned Night-Heron (*Nycticorax nycticorax*), Piping Plover (*Charadrius melodus*), Black-necked Stilt (*Himantopus mexicanus*), Franklin's Gull (*Larus pipixcan*), Caspian Tern (*Sterna caspia*), Common Tern (*Sterna hirundo*), Forster's Tern (*Sterna forsteri*), Least Tern (*Sterna antillarum*), and Black Tern (*Chlidonias niger*) as species of special concern in the state. Within the Montana portion of their range the U.S. Fish and Wildlife Service (USFWS) has listed the Piping Plover as Threatened and the Least Tern as Endangered, both of which are loosely colonial nesters. The White-faced Ibis and Black Tern were formerly listed by the USFWS as candidate (C2) species. All of these species are known to, or potentially occur on the Lewistown District of the BLM (LD-BLM).

During 1995 MTNHP surveyed 165 lakes, reservoirs, ponds and river reaches on 10 USGS quads and several miscellaneous larger wetlands on BLM lands on the Lewistown District (Reichel 1996). Black Terns were only found at two locations, both larger wetland areas; i.e., Freezeout Lake (> 1000 ac) and "Fifteen-mile Reservoir" (ca. 60 ac). None of the known Black Tern sites in Montana were smaller than 40 ac, though in other areas nesting Black Terns can occur in wetland areas of one or two acres. Other colonial nesters (i.e., Black-Crowned Night Heron, Black-necked Stilts, Franklin's Gull, Caspian Tern, Common Tern, Forster's Tern, Least Tern, and Black Tern) were found nesting only at the Freezeout Lake complex (a large wetland area).

Since most of the sites sampled in 1995 were small, the following survey was conducted on the LD-BLM, focusing on wetland areas larger than 40 acres. The objective of this follow-up survey was to assess the distribution of colonial nesting birds on LD-BLM lands, with emphasis on Montana state species of special concern. Also, the survey results would provide information for decisions on a BLM list of Sensitive Species. Species that are known or likely to occur on the LD-BLM are: Clarke's Grebe, American White Pelican, White-faced Ibis, Black-crowned Night-Heron, Black-necked Stilt, Franklin's Gull, Caspian Tern, Common Tern, Forster's Tern, Least Tern, and Black Tern.

## METHODS

Statewide 1:100,000 scale digital hydrology and land ownership coverages were available at the Montana Natural Resource Information Service (NRIS). The hydrology coverage included all bodies of water down to approximately 10 acres. A geographical information system (GIS) was used to query digital hydrology and land ownership for the LD-BLM and select all wetlands > 40 acres and occurring on BLM lands. A subset of sites consisting of the largest 20 unsurveyed wetlands and a minimum of 10 sites from each of the five Resource Areas (Great Falls, Havre, Judith, Phillips and Valley Resource Areas) comprising the LD-BLM was developed. Counties involved in the survey included Blaine, Chouteau, Fergus, Hill, Petroleum, Phillips, Teton, Toole, and Valley.

Visual surveys for colonial nesting waterbirds were conducted between 3 June and 25 July 1996. Length of the survey varied by the size of the site and ranged from 1 - 180 minutes. Locations, behavior suggesting breeding, numbers, and stage of development of young were recorded. For American White Pelicans, Great Blue Herons, Caspian Terns, Common Terns, and Forster's Terns the colony nesting locations were relatively easily observed and populations readily determined from a distance using binoculars/spotting scope to minimize disturbance. For Clark's Grebe, White-faced Ibis, Black-crowned Night-Heron, Franklin's Gull, and Black Tern, the nests were often hidden in dense vegetation. When these species were suspected to be nesting, searches for nests were conducted for up to 1 hour. If a nest was found, breeding was verified and the search ceased; if no nest was found, behavioral clues (defensive behaviors, carrying food or nesting material, etc.) were used to determine probable nesting. Numbers were estimated by observation of adults; if a Black-crowned Night-Heron rookery was suspected, observations resumed at dusk to count adults leaving to feed. Black-necked Stilts, Least Terns, and Piping Plovers have cryptic nests and are sensitive to disturbance; if behavioral clues suggested nesting, then searches for nests were conducted for 30 minutes. If a nest was found, breeding was considered verified and the search ceased; if no nest was found, behavioral clues were used to determine probable nesting. Numbers were estimated by observation of adults.

Habitat of all TES species located was recorded; for marsh/pond/lake locations habitat was recorded for all surveyed locations whether TES species were located or not. Vegetative habitat was recorded on a basic level, such as cattail marsh, bulrush, willow thicket, or sedge meadow, and percent of shoreline with emergent vegetation. Physical factors such as size of wetland, permanence of the water body and origin (natural/ man-made) were documented. Other non-target colonial nesters, or other TES species encountered, were recorded and mapped. Amphibians and reptiles observed during the surveys were recorded.

Detailed species accounts for TES colonial nesting shore- and waterbirds breeding, or potentially breeding, on the Lewistown District were provided in a previous report (Reichel 1996). These accounts will not be duplicated in this report.

## RESULTS AND DISCUSSION

A total of 132 lakes, reservoirs, and ponds were surveyed on the Lewistown District of the Bureau of Land Management between 3 June and 25 July 1996 (Figure 1 and Appendix 1). This is in addition to the 165 sites surveyed in 1995. Sixty survey sites were on the Phillips Resource Area, while 17 were on Great Falls, 18 on Havre, 16 on Judith and 21 on Valley Resource Areas. Approximate sizes of the surveyed sites ranged from 0 (i.e., dry sites) to 3207 acres. Half of the survey sites (66) were larger than 40 acres, while 23 of the sites were dry. Temporary bodies of water accounted for 116 sites, while 16 sites were permanent.

Nine species of colonial nesting shore- and waterbird were detected: American White Pelican, Black-crowned Night-Heron, Double-crested Cormorant (*Phalacrocorax auritus*), Black Tern, Common Tern, Forster's Tern, California Gull (*Larus californicus*), Franklin's Gull, and Ring-billed Gull (*Larus delawarensis*). All, but American White Pelican and Franklin's Gull, were documented as breeding or probable breeding at one or more sites (Tables 1 and 2). Verified or probable nesting by 1 or more species of colonial waterbird was identified at 19 (14%) sites. Breeding colonies of Double Crested Cormorant, Black-crowned Night-Heron and California Gull were found at only one site each. Breeding or probable breeding colonies at multiple sites were recorded for Ring-billed Gull (4 sites), Common Tern (7 sites), Forster's Tern (5 sites) and Black Tern (5 sites). (See Appendix 2 for maps of locations of TES colonial shore- and waterbirds observed during the 1996 field surveys.)

All, but one occupied site (7 acres), were larger than 30 acres. Thirteen (68%) of occupied sites were 100 acres or larger. These data were consistent with the 1995 survey, where no colonial nesters were found on bodies of water smaller than 40 acres (Reichel 1996).

Other TES or "watch-list" bird species encountered during the surveys were Common Loon (*Gavia immer*), Loggerhead Shrike (*Lanius ludovicianus*), Baird's Sparrow (*Ammodramus bairdii*) and Peregrine Falcon (*Falco peregrinus*) (Table 1). In addition, four amphibian and three reptile species were observed: tiger salamander (*Ambystoma tigrinum*), western chorus frog (*Pseudacris triseriata*), northern leopard frog (*Rana pipiens*), plains spadefoot (*Scaphiopus bombifrons*), painted turtle (*Chrysemys picta*), western terrestrial garter snake (*Thamnophis elegans*) and plains garter snake (*Thamnophis radix*) (Appendix 1).

### General Habitat Relationships

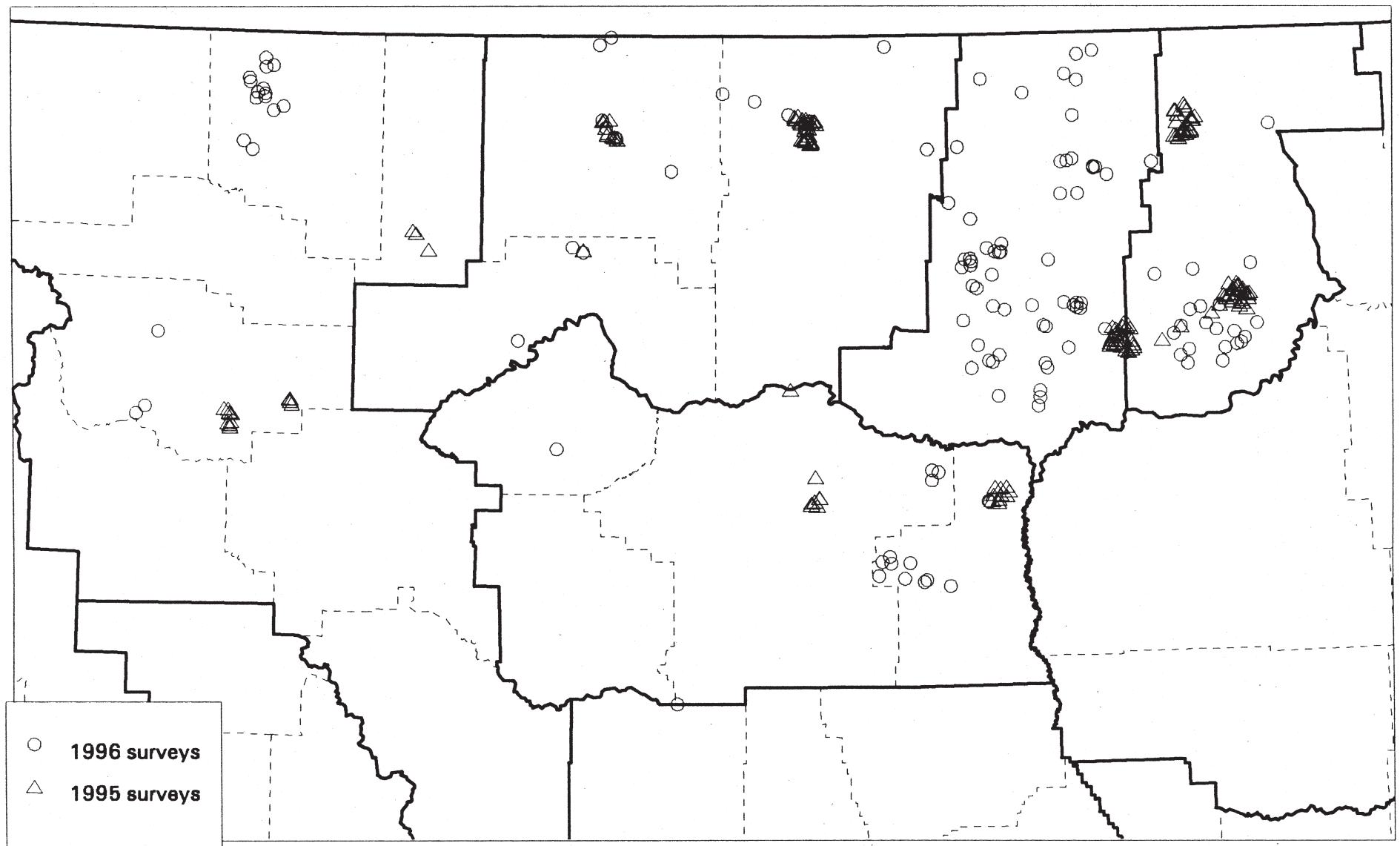
In an effort to evaluate general habitat relationships for TES colonial nesting shore- and water birds the following variables were examined: number of sites surveyed and occupied, site size (area of water body/ wetland), percent of shoreline with emergent vegetation for sites larger than 5 acres and permanence of the water body for sites larger than 5 acres. Data for TES colonial nesting birds were pooled from the 1995 and 1996 field surveys (Tables 3 - 5). (Note that no additional Black-necked Stilt colonies were identified during the 1996 field surveys.) Since 8 sites were repeats from 1995 and Missouri River reaches were not included, the total number of pooled sites was 269. There were 127 sites larger than 5 acres for which lake permanence had



**Figure 1.**

**Map of survey locations for colonial nesting birds, Lewistown District, BLM,  
1995 and 1996**

## Surveys for colonial nesting birds, Lewistown District, BLM



Montana Natural Heritage Program, May 07, 1997

Table 1. Breeding status of 8 species of colonial nesting bird and three other species on the Lewistown District, BLM, June 3 - July 25, 1997.

Year	Month	Day	Species	Location	Township/ Range	Section	Breeding Status
1996	6	17	AMERICAN WHITE PELICAN	War Horse Reservoir	T16NR25E	29	Transient
1996	7	24	AMERICAN WHITE PELICAN	Wild Horse Reservoir	T27NR27E	2	Transient
1996	7	24	AMERICAN WHITE PELICAN	Nelson Reservoir	T27NR30E	32	Transient
1996	7	25	AMERICAN WHITE PELICAN	Reservoir no. 161	T28NR28E	22	Transient
1996	6	5	BLACK-CROWNED NIGHT-HERON	Pond ca. 2 mi. SE of Shaver Ranch	T28NR27E	2	Breeding
1996	6	1	BLACK-TERN	Ca. 2.5 mi East of Oilmont	T35NR02W	31	Transient
1996	7	22	BLACK TERN	Pond off NW side Pishkin Reservoir	T22NR07W	3	Breeding
1996	7	11	BLACK TERN	Unnamed reservoir on Fifteenmile Creek	T34NR21E	18	Probable
1996	7	24	BLACK TERN	Wild Horse Reservoir	T27NR27E	2	Probable
1996	7	24	BLACK TERN	Lower Wild Horse Reservoir	T27NR27E	1	Probable
1996	7	25	BLACK TERN	Milk River WMA	T32NR33E	30	Probable
1996	6	4	CALIFORNIA GULL	North Chinook Reservoir	T35NR18E	24	Breeding
1996	6	4	CALIFORNIA GULL*	Ca. 20 mile NE of Havre	T35NR17E	10	Transient
1996	7	25	COMMON TERN	Mud Lake	T31NR31E	13	Breeding
1996	7	24	COMMON TERN	Wild Horse Reservoir	T27NR27E	2	Probable
1996	7	24	COMMON TERN	Lower Wild Horse Reservoir	T27NR27E	1	Probable
1996	6	18	COMMON TERN	Lewis Reservoir	T16NR24E	20	Probable
1996	7	24	COMMON TERN	Ward Reservoir	T34NR39E	28	Probable
1996	7	23	COMMON TERN	Two Forks Reservoir	T24NR37E	12	Probable
1996	7	24	COMMON TERN	VR-2 Reservoir	T28NR36E	23	Probable
1996	6	1	COMMON TERN	Lake 1.5 mi NNE of Sunburst	T36NR02W	5	Transient
1996	6	17	DOUBLE CRESTED CORMORANT	War Horse Reservoir	T16NR25E	29	Transient
1996	6	18	DOUBLE-CRESTED CORMORANT	Lewis Reservoir	T16NR24E	20	Breeding
1996	6	3	FORSTER'S TERN	Halfway Lake WPA (also call Sands WPA)	T32NR15E	14	Breeding
1996	6	4	FORSTER'S TERN	North Chinook Reservoir	T35NR18E	24	Probable
1996	6	4	FORSTER'S TERN	Ca. 20 mile NE of Havre	T35NR17E	10	Transient
1996	6	5	FORSTER'S TERN	Pond N of Tressler Coulee	T28NR27E	9	Breeding
1996	6	18	FORSTER'S TERN	Little Bear Lake	T16NR26E	31	Breeding

Table 1 (cont.). Breeding status of 8 species of colonial nesting bird and three other species on the Lewistown District, BLM, June 3 - July 25, 1997.

Year	Month	Day	Species	Location	Township/ Range	Section	Breeding Status
1996	7	11	FORSTER'S TERN	Tule Lake	T34NR20E	24	Breeding
1996	7	11	FORSTER'S TERN	Unnamned Reservoir on Fifteen Mile Creek	T34NR20E	24	Transient
1996	7	11	FORSTER'S TERN	Unnamed Reservoir	T33NR26E	13	Transient
1996	7	24	FORSTER'S TERN	Nelson Reservoir	T27NR30E	32	Transient
1996	6	4	FORSTER'S TERN	North Chinook Reservoir	T35NR18E	24	Probable
1996	6	1	FRANKLIN'S GULL	Temporary pond 3 mi. E., 2.4 mi. N. of Kevin	T35NR02W	20	Transient
1996	6	4	FRANKLIN'S GULL	Ca. 20 mile NE of Havre	T35NR17E	10	Transient
1996	6	19	FRANKLIN'S GULL	Unnamed Reservoir 1.5 mi WNW of Holland Reservoir	T20NR26E	17	Transient
1996	7	11	FRANKLIN'S GULL	Unnamed reservoir on Fifteenmile Creek	T34NR21E	18	Transient
1996	6	4	RING-BILLED GULL	North Chinook Reservoir	T35NR18E	24	Breeding
1996	6	2	RING-BILLED GULL	Middle Chain-of-Lakes merged with West Chain-of-Lakes	T33NR13E	5	Breeding
1996	6	4	RING-BILLED GULL	Ca. 20 mile NE of Havre	T35NR17E	10	Transient
1996	6	17	RING-BILLED GULL	War Horse Reservoir	T16NR25E	29	Transient
1996	7	12	RING-BILLED GULL	Whitewater Lake	T36NR31E	35	Breeding
1996	7	24	RING-BILLED GULL	Pea Lake	T37NR31E	35	Probable
1996	6	1	RING-BILLED GULL	Temporary pond 3 mi. E., 2.4 mi. N. of Kevin	T35NR02W	20	Transient
1996	7	22	RING-BILLED GULL	Bynum Reservoir	T25NR06W	6	Transient
1996	7	25	RING-BILLED GULL	Reservoir no. 161	T28NR28E	22	Transient
1996	7	11	BAIRD'S SPARROW	Unnamed Reservoir	T33NR26E	13	Probable
1996	7	22	COMMON LOON	Pishkin Reservoir	T22NR07W	3	Transient
1996	7	25	LOGGERHEAD SHRIKE	McChesney Reservoir	T32NR34E	12	Breeding
1996	7	22	PEREGRINE FALCON	Pond off NW side Pishkin Reservoir	T22NR07W	3	Transient

Table 2. Numbers of pairs of colonial nesting birds seen on the Lewistown District during 1996.

Location	DCCO	BCNH	CAGU	RBGU	COTE	FOTE	BLTE	Comments
<b>GREAT FALLS R.A.</b>								
Pishkin Res (pond off NE side)							3	saw Peregrine hunting
<b>HAVRE R.A.</b>								
N Chinook Res.			100	100		2 prob		
Halfway Lake						20		
Middle Chain of Lakes				4				
Tule Lake						6-10		
Fifteen Mile Res.							2 prob	
<b>JUDITH R.A.</b>								
Little Bear Lake						3		
Lewis Res.	5				1 prob			

DCCO = Double-crested Cormorant, BCNH = Black-crowned Night-Heron, CAGU = California Gull, RBGU = Ring-billed Gull, COTE = Common Tern, FOTE = Forster's Tern, BLTE = Black Tern.

Table 2 (cont.). Numbers of pairs of colonial nesting birds seen on the Lewistown District during 1996.

Location	DCCO	BCNH	CAGU	RBGU	COTE	FOTE	BLTE	Comments
<b>PHILLIPS R.A.</b>								
Whitewater Lake				30				
Pea Lake				3 prob				
Wild Horse Res.					10		1 prob	
Lower Wild Horse Res.					5 prob		2 prob	
Milk River WMA							10 prob	
Mud Lake					2			
pond T28N R27E S2 NE ("Hoss Reservoir")		5-8						
pond T28N R27E S9 W						1		
<b>VALLEY R.A.</b>								
Ward Res.					6 prob			
Two Forks Res.					1 prob			
VR-2 Res.					4 prob			

DCCO = Double-crested Cormorant, BCNH = Black-crowned Night-Heron, CAGU = California Gull, RBGU = Ring-billed Gull, COTE = Common Tern, FOTE = Forster's Tern, BLTE = Black Tern.

Table 3. Relationship of lake size to occupancy by TES colonial nesting waterbirds, Lewistown District, BLM<sup>1</sup>.

Size (acres)	Survey sites	Black-crowned Night-Heron	Black-necked Stilt	Common Tern	Forster's Tern	Black Tern
0 (dry) <sup>2</sup>	44					
.1 - 10	116	1				
11 - 40	38			2	1	
41 - 100	36			1		1
101 - 1000	28			4	4	3
> 1000	7	1	1	1	1	2
Total	269	2	1	8	6	6

<sup>1</sup> Data were pooled from 1995 and 1996 field surveys.

<sup>2</sup> Lakes were selected for surveying by being >40 acres in the Montana 100k GIS coverage and on or adjacent to BLM lands; however they were dry at the time of survey.

Table 4. Relationship of shoreline emergent vegetation to occupancy by colonial nesting waterbirds in wetlands > 5 acres, Lewistown District, BLM<sup>1</sup>.

% of shoreline w/ emergent veg	Survey sites	Black-crowned Night-Heron	Black-necked Stilt <sup>2</sup>	Common Tern	Forster's Tern	Black Tern
0	9		2	1		
1 - 25	20	1			1	1
26 - 50	18		1	1	1	
51 - 100	74	1	3	6	3	5
Total	121	2	6	8	5	6

<sup>1</sup> Data were pooled from 1995 and 1996 field surveys.

Table 5. Relationship of lake permanence to occupancy by colonial nesting waterbirds in wetlands > 5 acres, Lewistown District, BLM<sup>1</sup>.

Permanence	Survey sites	Black-crowned Night-Heron	Black-necked Stilt	Common Tern	Forster's Tern	Black Tern
Permanent	65	1	1	7	4	6
Temporary	62	1	0	1	2	0
Total	127	2	1	8	6	6

<sup>1</sup> Data were pooled from 1995 and 1996 field surveys.



been recorded, and 116 sites larger than 5 acres, for which the percent of shoreline with emergent vegetation had been recorded. Because of the large size of Freezeout Lake and numerous Black-necked Stilt breeding locations ( $n = 6$ ), percent of shoreline with emergent vegetation was recorded independently for six sites. Therefore, the number of sites examined for relationships between site occupancy and emergent vegetation was 122.

Lake sizes were grouped into 6 size classes (Table 3). With the exception of one Black-crowned Night-Heron colony on a site of 7 acres, occupied sites surveyed in 1995 and 1996 were larger than 10 acres. The majority (83%) of occupied sites were 40 acres or larger. The association of three species of colonial nesting shore- and water birds with larger wetlands/ wetland complexes was demonstrated in Iowa by Brown and Dinsmore (1986), where Black Tern, Forster's Tern and Black-crowned Night-Heron tended to be associated with marshes that were larger than 45 acres.

Data on percent of shoreline with emergent vegetation were grouped into four classes (Table 4). Seventy-eight percent of occupied sites had emergent vegetation along more than 25 percent of the shoreline. Three occupied sites (11%) had no emergent vegetation, two for Black-necked Stilts and one for common tern. These two species frequently nest in open areas (Reichel 1996, Johnsgard 1979).

Eighty-three percent of the occupied sites were on permanent bodies of water (Table 5). It is likely that the temporary bodies of water that were occupied will hold water through the breeding season. None of the dry sites were occupied by colonial nesting birds. Similarly, in the prairie pothole region of North Dakota Kantrud and Stewart (1984) found semipermanent wetlands supported substantially more breeding shore- and waterbirds.

### **Black-crowned Night-Heron**

In North America, inland colonies of Black-crowned Night-Heron tend to be located in large wetland complexes with substantial emergent vegetation (Brown and Dinsmore 1986, Davis 1993). Only two occupied sites were found during the 1995 and 1996 surveys, Freezeout Lake (4,000 acres) and "Hoss Reservoir" (7 acres). "Hoss Reservoir" is a temporary body of water with only sparse emergent vegetation. There are a number of temporary and permanent bodies of water in the vicinity of "Hoss Reservoir", which may contribute the maintenance of a colony at this site.

### **Black-necked Stilt**

Only one survey site, Freezeout Lake, visited in 1995 contained nesting Black-necked Stilts. Black-necked Stilts nest in medium to large wetland complexes in Montana (Reichel 1996). Freezeout Lake is one of 5 reported breeding locations in Montana.

### **Common Tern**

In the Great Plains most Common Tern nesting occurs on islands in large lakes or reservoirs in sparsely vegetated areas, but near vegetation (Johnsgard 1979). However, in Canada, Common

Terns occasionally nest in marshes (Godfrey 1986). On the Lewistown District 8 sites, all larger than 30 acres, were occupied by Common Terns and all, but one site, had emergent vegetation along more than 25% of the shoreline. One occupied site had no emergent vegetation and was a temporary body of water. All nesting occurred on islands.

### **Forster's Tern**

Forster's tern is described as a bird that inhabits large marsh complexes (Brown and Dinsmore 1986) and tends to avoid small marshes (Johnsgard 1979). On the Lewistown District five survey sites were occupied by Forster's Tern. Five of the 6 sites were larger than 100 acres and had emergent vegetation along more than 25% of the shoreline. Two of the sites were on temporary bodies of water.

### **Black Tern**

Black Terns typically nest in shallow freshwater marshes with emergent vegetation (Dunn & Argo 1995). In prairie marshes in Iowa, Black Terns preferred marshes of 50+ acres (Brown and Dinsmore 1986) and in North Dakota, 72% of nests were in semipermanent ponds (Kantrud and Stewart 1984). During the 1995 and 1996 surveys on the Lewistown District, 6 survey sites were occupied by Black Terns. All occupied sites were larger than 40 acres and 5 of the 6 sites were larger than 100 acres. Five of the 6 sites had emergent vegetation along more than 50% of the shoreline.

## **RECOMMENDATIONS**

Recommendations for further work on colonial nesting shore- and waterbirds and management were provided by Reichel (1996). These recommendations are presented below with only minor modification.

### **Surveys, Monitoring and Research**

- 1) All incidental sightings and specific surveys of breeding or possibly breeding colonial nesting wetland birds should be recorded and maintained for future area biologist's use. Ideally, copies should be forwarded to the Natural Heritage Program, which maintains a state-wide database (BCD) on these species. These can be used for land use planning and can also provide a backup in case of loss of originals or personnel turnover. Further, the BCD provides a statewide database of locations, productivity, and general landscape associations. At a minimum, date, species, approximate numbers, precise location, and evidence of breeding should be recorded.
- 2) Additional surveys should be conducted, concentrating on larger wetlands and wetland complexes on the district that currently have not been surveyed. Some previously visited large sites may not have been thoroughly surveyed and should be revisited. Also, temporary sites that were dry during 1996 surveys may hold water in other years and may be suitable for nesting birds when water is present.

- 3) Following additional surveys, a monitoring program should be initiated, with resurveying of known current and historic sites at least every 5 years. Resurveying should be done by visiting a colony twice in a single year: once in late spring to determine if breeding took place, and once in mid-summer to check if reproduction was successful. Ideal dates are species- and location-specific, and may vary with annual weather conditions and water level.
- 4) Life history and ecology of the wetland colonial nesting birds in Montana is poorly known for most species. Long-term monitoring will provide information on timing of and habitat requirements needed for successful breeding.
- 5) It is recommended that any wetland areas over 20 acres, which are under consideration for mining, road building, grazing lease renewal, or other large-scale potentially habitat altering activities, be surveyed thoroughly for colonial nesting bird presence and breeding activity.

### Management

With an increasing number of colonial nesting wetland bird species on the decline, it seems reasonable to pro-actively manage habitat to support them. While not all ways of preserving these species are currently known, several management activities could certainly negatively impact them. Without adequate breeding areas, these species cannot survive, and the type of wetland area used is often species-specific.

- a. All colonial nesting wetland birds are sensitive to disturbance during much or all of the breeding season; therefore, disturbance should be minimized during the breeding season. This is often best done by limiting access, and certainly not by improving access or by encouraging use of the area for unrelated activities.
- b. Cattle trampling may severely impact shore nesting species such as Black-necked Stilts or Piping Plovers. If possible, grazing use should be timed to follow the nesting season.
- c. Dramatic changes in water level may significantly impact reproduction. For most species a large rise in water level following nesting will destroy many nests. Conversely, a large drop in level may result in connecting nesting islands to the mainland or draining breeding marshes of such species as Franklin's Gulls and exposing the colonies to vastly increased predation.

## LITERATURE CITED

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## **A P P E N D I X 1**

**Characteristics of wetland sites surveyed for colonial nesting birds,  
Bureau of Land Management, Lewistown District, June - July, 1996.**

Appendix 1. Characteristics of sites surveyed for colonial nesting birds, Bureau of Land Management, Lewistown District, June - July, 1996.

County	MO	DA	YEAR	LOCATION	T & R	SEC	APPROX. ACRES	ORIGIN*	DESCRIPTION	DEPTH	pH	% SHORELINE w/ EMERGENT VEG.	EMERGENT VEG. SPECIES	SURVEY SUCCESS	HERPS <sup>+</sup>
Blaine	6	3	1996	East Martin Lake	035N017E	34	4		temporary lake/pond					N	
Blaine	6	4	1996	North Chinook Reservoir	035N018E	24	520	m	permanent lake/pond	deep (>2m)	5.5	>51%	sedge	Y	PSTR
Blaine	6	4	1996	Ca. 20 mile NE of Havre	035N017E	10	54	m	permanent lake/pond	deep (>2m)	5.5	>51%	sedge	N	PSTR
Blaine	7	10	1996	Akali Lake	037N023E	13	275	n	permanent lake/pond	medium (1-2m)	8	26-50%	sedge	N	
Blaine	7	11	1996	Tule Lake	034N020E	24	122		permanent lake/pond	medium (1-2m)		>51%	sedge, rush	Y	
Blaine	7	11	1996	Unnamed Reservoir on Fifteenmile Creek	034N021E	18	68	m	temporary lake/pond	medium (1-2m)		>51%	rush, sedge	Y	
Blaine	7	11	1996	Unnamed Pothole, 3 mi E and 9.5 mi N of Chinook	034N020E	5	15	n	temporary lake/pond	medium (1-2m)	5.5	>51%	sedge, rush	Y	
Blaine	7	11	1996	Pothole, ca. 12 miles northeast of Savoy	033N025E	23	50	n	temporary lake/pond	shallow/small (<1m)		>51%	rush, sedge	N	
Chouteau	6	1	1996	Lake just E of Lonesome Lake	029N011E	14	47	m	temporary lake/pond			>51%	polygonum, rush, sedge	N	
Chouteau	6	2	1996	Old oxbow 0.5 mi. N, 2.5 mi. E of Loma	025N009E	3	0	n	temporary lake/pond					N	
Chouteau	6	2	1996	Lonesome Lake	029N012E	19	731	n	temporary lake/pond		5.5	>51%	polygonum, rush, sedge	N	PSTR
Chouteau	6	3	1996	Kingsbury Lake, Kingsbury WPA	021N011E	17	1376	n	permanent lake/pond	deep (>2m)	7.5	1-25%	juncus, polygonum	N	PSTR
Fergus	6	17	1996	1.2 mi. NNE of Judith Gap	011N016E	20	13	m	permanent lake/pond	deep (>2m)	6.5	>51%	rush, cattail, sedge	N	PSTR, RAPI
Fergus	6	19	1996	Unnamed Reservoir 1.5 mi WNW of Holland Reservoir	020N026E	17	36	m	permanent lake/pond			1-25%	rush, foxtail	N	
Fergus	6	19	1996	Holland Reservoir	020N026E	15	23	m	permanent lake/pond			1-25%	rush, foxtail	N	
Fergus	6	19	1996	Buffalo Wallow Reservoir	020N026E	29	24	m	permanent lake/pond	deep (>2m)	5.5	26-50%	rush, sedge	N	SCBO
Hill	6	2	1996	Middle Chain-of-Lakes merged with West Chain of Lakes	033N013E	5	105	n	temporary lake/pond	deep (>2m)	6.5	26-50%	sedge	Y	PSTR
Hill	6	2	1996	Lake at north end of Chain-of-Lakes Coulee	034N012E	14	43	n	temporary lake/pond	medium (1-2m)	7	>51%	sedge	N	PSTR
Hill	6	2	1996	Ca. 7.5 miles N of	034N012E	24	27	n	temporary lake/pond	shallow/small	6.5	>51%	sedge	N	PSTR

\* n = natural, m = man-made

<sup>+</sup> AMTI = Tiger Salamander (*Ambystoma tigrinum*), CHPI = Painted Turtle (*Chrysemys picta*), PSTR = Western Chorus Frog (*Pseudacris triseriata*), RAPI = Northern Leopard Frog (*Rana pipiens*), SCBO = Plains Spadefoot (*Scaphiopus bombifrons*), THEL = Western Terrestrial Garter Snake (*Thamnophis elegans*) and THRA = Plains Garter Snake (*Thamnophis radix*)

Appendix 1 (cont.). Characteristics of sites surveyed for colonial nesting birds, Bureau of Land Management, Lewistown District, June - July, 1996.

County	MO	DA	YEAR	LOCATION	T & R	SEC	APPROX. ACRES	ORIGIN *	DESCRIPTION	DEPTH	pH	% SHORELINE w/ EMERGENT VEG.	EMERGENT VEG. SPECIES	SURVEY SUCCESS	HERPS +
				Kremlin						(<1m)					
Hill	6	2	1996	Eastern-most Chain-of-Lakes	033N013E	4	59	n	temporary lake/pond	medium (1-2m)	6.5	26-50%	sedge	N	PSTR
Hill	6	3	1996	Halfway Lake W. P. A. also called Sands WPA.)	032N015E	14	241	m	permanent lake/pond	deep (>2m)	7.5	1-25%		Y	PSTR
Hill	6	3	1996	Lake on North side of Wild Horse Lake	037N013E	6	37	n	temporary lake/pond	shallow/small (<1m)	6	1-25%		N	PSTR
Hill	6	3	1996	West end of Wild Horse Lake Bed	037N012E	15	24	n	temporary lake/pond	shallow/small (<1m)	5.5	>51%		N	PSTR
Petroleum	6	17	1996	War Horse Reservoir	016N025E	29	1444	m	permanent lake/pond	deep (>2m)	6.5	>51%	rush, sedge, foxtail	Y	PSTR, SCBO
Petroleum	6	18	1996	Wild Horse Lake	016N025E	3	1595	n	temporary lake/pond	medium (1-2m)		>51%	foxtail, unkn. Forb	N	
Petroleum	6	18	1996	Lewis Reservoir	016N024E	20	137	m	permanent lake/pond	deep (>2m)	6	>51%	rush, sedge	Y	PSTR, RAPI
Petroleum	6	18	1996	Temporary lake 0.6 mi. NE of Blakeslee School	017N024E	27	121	n	temporary lake/pond	medium (1-2m)			rush, sedge	N	
Petroleum	6	18	1996	Upper Duck Creek Reservoir	016N024E	4	23	m	temporary lake/pond	medium (1-2m)		>51%	rush, sedge	N	
Petroleum	6	18	1996	Duck Creek Reservoir	016N024E	2	53	m	permanent lake/pond	deep (>2m)		26-50%	rush, sedge, grass	N	
Petroleum	6	18	1996	Payola Reservoir	016N026E	29	29	m	permanent lake/pond			>51%	rush, sedge, bulrush	N	
Petroleum	6	18	1996	Vogel Reservoir	015N027E	6	61	m	permanent lake/pond	deep (>2m)			rush, bulrush	N	
Petroleum	6	18	1996	Little Bear Lake	016N026E	31	138	n	temporary lake/pond	shallow/small (<1m)	6		foxtail	Y	PSTR, RAPI
Petroleum	6	19	1996	Drag Reservoir	019N028E	21	91	m	permanent lake/pond			26-50%	rush, bulrush, sedge	N	
Petroleum	6	19	1996	Pond just below Drag Reservoir	019N028E	27	3	m	temporary lake/pond	medium (1-2m)	6	>51%	cattail, bulrush, rush	N	CHPI, THRA
Phillips	6	4	1996	Martin Lake	034N017E	4	356	n	temporary lake/pond	shallow/small (<1m)	5.5	>51%	sedge	N	PSTR
Phillips	6	4	1996	Lake S of Shawn Ranch	029N027E	33	207	n	temporary lake/pond	shallow/small (<1m)	5.5	>51%	salt grass, small forb	N	PSTR
Phillips	6	4	1996	Dodson Reservoir	031N026E	26	39	m	permanent lake/pond		6	>51%	cattail, sedge, rush	N	PSTR, RAPI
Phillips	6	4	1996	Pont of Rocks Reservoir	030N027E	15	129		permanent lake/pond			26-50%	cattail, bulrush	N	

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Appendix 1 (cont.). Characteristics of sites surveyed for colonial nesting birds, Bureau of Land Management, Lewistown District, June - July, 1996.

County	MO	DA	YEAR	LOCATION	T & R	SEC	APPROX. ACRES	ORIGIN*	DESCRIPTION	DEPTH	pH	% SHORELINE w/ EMERGENT VEG.	EMERGENT VEG. SPECIES	SURVEY SUCCESS	HERPS <sup>+</sup>
Phillips	6	5	1996	Temporary pond 1.3 mi. SE of Shawn Ranch	029N027E	34	28	n	temporary lake/pond	shallow/small (<1m)		>51%	sedge, polygonum	N	
Phillips	6	5	1996	Pond ca. 2 mi. SE of Shawn Ranch (= "Hoss Reservoir")	028N027E	2	7	m	temporary lake/pond	medium (1-2m)		1-25%	rush, grass, bulrush	Y	
Phillips	6	5	1996	Pond N. of Tressler Coulee	028N027E	9	39	n	temporary lake/pond	medium (1-2m)		>51%	rush, polygonum	Y	PSTR
Phillips	6	5	1996	N Fork Halfway Coulee Reservoir	029N028E	26	35	m	permanent lake/pond	medium (1-2m)			rush, polygonum	N	
Phillips	6	5	1996	Temporary Pond N of Halfway Coulee	029N028E	13	9		temporary lake/pond	medium (1-2m)		>51%	rush, polygonum	N	PSTR
Phillips	6	5	1996	Temporary lake in SW drainage of W. Alkali Creek	028N027E	11	49	n	temporary lake/pond	shallow/small (<1m)		26-50%	rush, grass	N	
Phillips	6	20	1996	No Name Coulee pond	027N032E	29	0.5	n	temporary lake/pond					N	
Phillips	6	20	1996	Unnamed pond 1.2 mi. W, 2.2 mi. S of Black Cow Reservoir	027N032E	31	28	n	temporary lake/pond	shallow/small (<1m)		26-50%	unkn. Forb, polygonum	N	
Phillips	6	20	1996	Unnamed pond W of Horse Pasture Coulee	027N031E	27	40	n	temporary lake/pond	shallow/small (<1m)		26-50%	rush, unkn. Forb	N	
Phillips	6	20	1996	Unnamed pond 2.7 mi. S, 0.5 mi. W of Black Cow Reservoir	027N032E	32	24	n	temporary lake/pond	shallow/small (<1m)		>51%	grass, rush	N	
Phillips	6	20	1996	Bennett Lake	028N030E	1	71	n	temporary lake/pond	medium (1-2m)	5.5	>51%	low bulrush, polygonum	N	PSTR
Phillips	6	20	1996	Lake PR-19	026N033E	30	67	m	temporary lake/pond	medium (1-2m)	5.5	>51%	bulrush	N	CHPI, PSTR
Phillips	6	20	1996	Unnamed pond 1.5 mi. S, 2.3 mi. W of Black Cow Reservoir	027N031E	25	22	n	temporary lake/pond	shallow/small (<1m)		>51%	unknow forb, polygonum		
Phillips	6	20	1996	Unnamed pond 1.4 mi. S, 1.2 mi. W of Black Cow Reservoir	027N032E	30	43	n	temporary lake/pond	medium (1-2m)	5.5	>51%	rush, polygonum	N	PSTR
Phillips	6	21	1996	Sun Prairie Flats dry lake bed	025N031E	23	0							N	
Phillips	6	21	1996	Pond 1.7 mi. E., 2 mi. S of First Creek Community Center	024N030E	13	23	n	temporary lake/pond	shallow/small (<1m)		1-25%	unkn. Forb	N	

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Phillips	6	21	1996	Pond 1.2 mi. E., 0.6 mi. S of First Creek Community Center	024N030E	11	38	n	temporary lake/pond	shallow/small (<1m)		>51%	sedge, grass	N	
Phillips	7	10	1996	Chapman Reservoir, in Woody Island Coulee	036N027E	25	62	n	temporary lake/pond	medium (1-2m)	8	>51%	sedge	N	PSTR, THRA
Phillips	7	11	1996	Unnamed Reservoir on Down Reservoir Quad	033N026E	13	70	m	temporary lake/pond	deep (>2m)	5.5	>51%	rush, sedge	N	
Phillips	7	12	1996	Whitewater Lake	036N031E	35	665	n	permanent lake/pond	medium (1-2m)	6	26-50%	sedge, rush	Y	AMTI, PSTR
Phillips	7	12	1996	Martin Lake, near Loring	035N029E	14	252	n	temporary lake/pond	shallow/small (<1m)		>51%		N	
Phillips	7	12	1996	Austin Lake	034N031E	10	0		temporary lake/pond					N	
Phillips	7	22	1996	Unnamed Lake	025N028E	25	44	n	temporary lake/pond	shallow/small (<1m)	6	>51%	rush	N	THRA
Phillips	7	22	1996	Shed Lake	025N028E	34	0		temporary lake/pond					N	
Phillips	7	22	1996	Beam Lake	024N028E	2	0		temporary lake/pond					N	
Phillips	7	22	1996	Unnamed reservoir, 0.5 mi N of Dry Fork Creek	024N027E	14	52	m	temporary lake/pond	medium (1-2m)	7.5	>51%	rush	Y	RAPI
Phillips	7	23	1996	Indian Lake	023N030E	22	117	n	temporary lake/pond	shallow/small (<1m)	75	>51%	rush, other?	N	THRA
Phillips	7	23	1996	Unnamed Lake, ca. 2 mi S of Indian Lake	023N030E	23	42	n	temporary lake/pond	shallow/small (<1m)	7	>51%	rush	N	
Phillips	7	23	1996	Dry Lake	023N030E	10	0		temporary lake/pond					N	
Phillips	7	23	1996	Unnamed Lake	023N028E	13	0		temporary lake/pond					N	
Phillips	7	23	1996	Unnamed reservoir SE of Whitcomb Lake	026N030E	23	0		temporary lake/pond					N	
Phillips	7	23	1996	Whitcomb Lake	026N030E	22	206	n	temporary lake/pond	shallow/small (<1m)	6.5	>51%	weedy sp., rush	N	
Phillips	7	23	1996	Nelson Reservoir	027N030E	32	146	m	temporary lake/pond	medium (1-2m)	5.5	open 0%		N	
Phillips	7	24	1996	Pea Lake	037N031E	35	494	m	permanent lake/pond	medium (1-2m)	5.5	>51%	flowering sp., rush	Y	THRA
Phillips	7	24	1996	Wild Horse Reservoir	027N027E	2	217	m	permanent lake/pond	deep (>2m)	6.5	1-25%	rush	Y	RAPI, THRA
Phillips	7	24	1996	Lower Wild Horse	027N027E	1	222	m	permanent lake/pond	medium (1-2m)	8	>51%	rush	Y	RAPI

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				Reservoir											
Phillips	7	24	1996	Unnamed Lake; off Hwy 191, ca. 1 mile N of Little Warm Creek	026N027E	10	0	n	temporary lake/pond					N	
Phillips	7	24	1996	Unnamed Lake, 2 mi NW of Whitewater Reservoir	036N031E	20	46	n	temporary lake/pond	shallow/small (<1m)	5.5	>51%	rush, flowering sp.	N	
Phillips	7	24	1996	Unnamed reservoir, ca. 3 miles NE of Pea Lake	037N032E	29	71	m	permanent lake/pond	medium (1-2m)	5.5	>51%	rush	N	
Phillips	7	25	1996	Unnamed lake	029N028E	20	102	n	temporary lake/pond	shallow/small (<1m)		>51%		N	
Phillips	7	25	1996	reservoir	029N028E	22	36	m	permanent lake/pond	medium (1-2m)	6.5	>51%	rush	N	RAPI, THRA
Phillips	7	25	1996	Reservoir no. 161	028N028E	22	84	m	permanent lake/pond	medium (1-2m)	7	1-25%	rush	N	CHPI
Phillips	7	25	1996	Unnamed reservoir	029N028E	23	35	m	temporary lake/pond	medium (1-2m)	7	1-25%	rush	N	
Phillips	7	25	1996	Unnamed lake	027N028E	27	49	n	temporary lake/pond	shallow/small (<1m)		1-25%		N	
Phillips	7	25	1996	Unnamed reservoir	027N029E	31	48	n	temporary lake/pond	shallow/small (<1m)		>51%		N	
Phillips	7	25	1996	Veseth Reservoir	025N028E	7	404		temporary lake/pond					N	
Phillips	7	25	1996	Milk River WMA	032N033E	30	340	m	permanent lake/pond			>51%	bulrush, cattail, sedge	N	
Phillips	7	25	1996	Mud Lake	031N031E	13	53	m	permanent lake/pond			open 0%		Y	
Phillips	7	25	1996	McNeil Slough	032N032E	15	26	n	permanent lake/pond			>51%	cattail, willow	N	
Phillips	7	25	1996	Pond 2.5 mi NNW of Hewitt Lake	032N031E	2	10	m	temporary lake/pond	shallow/small (<1m)		26-50%	polygonum	N	
Phillips	7	25	1996	Pond 5 miles west northwest of Hewitt Lake	032N031E	5	0	n	temporary lake/pond					N	
Phillips	7	25	1996	Pond 2 mi NE of Bowdoin Lake	031N031E	17	8	n	temporary lake/pond			>51%	rush, sedge, grass	N	
Phillips	7	25	1996	McChesney Reservoir	032N034E	12	81	m	permanent lake/pond			>51%	willow, bulrush, rush	N	
Phillips	7	25	1996	Pond 2.5 mi northwest of Hewitt Lake	032N031E	3	0	n	temporary lake/pond					N	
Phillips	7	25	1996	Big McNeil Slough	032N032E	14	42	n	permanent lake/pond			>51%	cattail, willow	N	

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Phillips	7	25	1996	McNeil Slough WPA	032N032E	15	24	n	permanent lake/pond		6	>51%	cattail, bulrush	N	CHPI, RAPI
Teton	7	22	1996	Pishkin Reservoir and pond off northwest side	022N007W	3	1525	n	permanent lake/pond	medium (1-2m)	6	>51%	bulrush	Y	THEL
Teton	7	22	1996	Split Rock Lake	022N007W	17	167	n	permanent lake/pond	deep (>2m)		1-25%	bulrush, rush, grass	N	
Teton	7	22	1996	Bynum Reservoir	025N006W	6	3207	m	permanent lake/pond			open 0%	rush, bulrush	Y	
Toole	6	1	1996	Ca. 2.5 miles East of Oilmont	035N002W	31	23	n	temporary lake/pond	shallow/small (<1m)		1-25%		N	PSTR
Toole	6	1	1996	2.5 miles E. Sunburst	036N002W	15	0		temporary lake/pond					N	
Toole	6	1	1996	Ca. 6 miles N of Kevin	036N003W	34	79	m	temporary lake/pond	medium (1-2m)	6	26-50%	sedge	N	
Toole	6	1	1996	Ca. 5 miles N of Kevin	035N003W	3	0		temporary lake/pond					N	
Toole	6	1	1996	Ca. 2 to 3 miles northeast of Kevin	035N003W	13	1		permanent lake/pond					N	
Toole	6	1	1996	Ca. 1.5 miles NE of Kevin	035N003W	25	59	n	temporary lake/pond	shallow/small (<1m)	8			N	PSTR
Toole	6	1	1996	Ca. 2.5 miles NW of Oilmont	035N002W	20	6	n	temporary lake/pond	shallow/small (<1m)		26-50%		N	PSTR
Toole	6	1	1996	Temporary pond 1 mi. S of Oilmont	034N002W	10	0.4	n	temporary lake/pond	shallow/small (<1m)		1-25%	rush, sedge, grass	N	
Toole	6	1	1996	Lake 1.5 mi NNE of Sunburst	036N002W	5	1374	n	temporary lake/pond	medium (1-2m)		1-25%	rush, grass	Y	
Toole	6	1	1996	Temporary Lake SE of Sunburst	036N002W	17	198	n	temporary lake/pond	shallow/small (<1m)		1-25%	rush, grass	N	
Toole	6	1	1996	Temporary pond, 5 mi. N, 4 mi. E of Shelby	033N003W	26	10	n	temporary lake/pond	shallow/small (<1m)		1-25%	grass, rush	N	PSTR
Toole	6	1	1996	Aloe Lake	033N003W	16	0		temporary lake/pond					N	
Toole	6	1	1996	Temporary pond 3 mi. E., 2.4 mi. N of Kevin	035N002W	20	22	n	temporary lake/pond	shallow/small (<1m)	6.5	>51%	rush, sedge, grass	Y	PSTR
Toole	6	1	1996	Temporary pond, 2.5 mi. E, 3.4 mi. N of Kevin.	035N002W	7	92	n	temporary lake/pond	shallow/small (<1m)	7	>51%	grass, rush, sedge	N	PSTR
Valley	7	23	1996	Two Forks Reservoir	024N037E	12	32	m	permanent lake/pond	deep (>2m)	7.5	>51%	rush, bulrush	Y	AMTI, THRA
Valley	7	23	1996	Desert Coulee Reservoir	024N036E	10	35	m	permanent lake/pond			>51%	sedge, bulrush, rush	N	AMTI

\* n = natural, m = man-made

<sup>+</sup> AMTI = Tiger Salamander (*Ambystoma tigrinum*), CHPI = Painted Turtle (*Chrysemys picta*), PSTR = Western Chorus Frog (*Pseudacris triseriata*), RAPI = Northern Leopard Frog (*Rana pipiens*), SCBO = Plains Spadefoot (*Scaphiopus bombifrons*), THEL = Western Terrestrial Garter Snake (*Thamnophis elegans*) and THRA = Plains Garter Snake (*Thamnophis radix*)

Appendix 1 (cont.). Characteristics of sites surveyed for colonial nesting birds, Bureau of Land Management, Lewistown District, June - July, 1996.

County	MO	DA	YEAR	LOCATION	T & R	SEC	APPROX. ACRES	ORIGIN*	DESCRIPTION	DEPTH	pH	% SHORELINE w/ EMERGENT VEG.	EMERGENT VEG. SPECIES	SURVEY SUCCESS	HERPS <sup>+</sup>
Valley	7	23	1996	Hard Pan Creek Reservoir	025N036E	27	0	m	temporary lake/pond					N	
Valley	7	23	1996	Halfpint Reservoir	025N036E	31	34	m	permanent lake/pond		7	26-50%	sedge, rush, bulrush	N	PSTR
Valley	7	23	1996	Triple Crossing Reservoir	026N036E	29	0	m	temporary lake/pond					N	
Valley	7	23	1996	Pearson Detention Reservoir	025N038E	4	0	m	temporary lake/pond					N	
Valley	7	23	1996	Collins Detention Reservoir	025N037E	25	0.2	m	temporary lake/pond					N	
Valley	7	23	1996	Willow Creek Flat Reservoir	026N039E	29	0	m	temporary lake/pond					N	
Valley	7	23	1996	Target Detention Reservoir	025N038E	11	0	m	temporary lake/pond					N	
Valley	7	23	1996	Bomber Detention Diversion Reservoir	025N038E	15	0	m	temporary lake/pond					N	
Valley	7	23	1996	Lori Detention Reservoir	025N038E	21	0	m	temporary lake/pond					N	
Valley	7	23	1996	UL Reservoir	025N035E	1	0	m	temporary lake/pond					N	
Valley	7	23	1996	Amambide Reservoir	026N036E	1	41	m	permanent lake/pond			open 0%		N	
Valley	7	23	1996	Gutshot Detention Reservoir	026N037E	34	1	m	temporary lake/pond	shallow/small (<1m)		1-25%	sedge, bulrush	N	
Valley	7	23	1996	TC Drop Dam Reservoir	026N037E	30	0	m	temporary lake/pond					N	
Valley	7	23	1996	Mahan and Hoyt Reservoir	028N039E	18	175	n	permanent lake/pond			>51%	bulrush, cattail	N	
Valley	7	24	1996	Ward Reservoir	034N039E	28	31	m	permanent lake/pond	deep (>2m)	6	>51%	cattail, polygonum	Y	CHPI, RAPI
Valley	7	24	1996	VR-2 Reservoir	028N036E	23	184	m	permanent lake/pond			1-25%	polygonum	N	
Valley	7	24	1996	Coal Bank Reservoir	028N035E	29	79	m	permanent lake/pond	deep (>2m)		1-25%	polygonum, grass, rush	N	
Valley	7	24	1996	Jim Reservoir	026N036E	3	82	m	permanent lake/pond	deep (>2m)		open 0%		N	
Valley	7	24	1996	Grubb Reservoir	027N037E	35	229	m	permanent lake/pond			open 0%	willow	N	

\* n = natural, m = man-made

<sup>+</sup> AMTI = Tiger Salamander (*Ambystoma tigrinum*), CHPI = Painted Turtle (*Chrysemys picta*), PSTR = Western Chorus Frog (*Pseudacris triseriata*), RAPI = Northern Leopard Frog (*Rana pipiens*), SCBO = Plains Spadefoot (*Scaphiopus bombifrons*), THEL = Western Terrestrial Garter Snake (*Thamnophis elegans*) and THRA = Plains Garter Snake (*Thamnophis radix*)

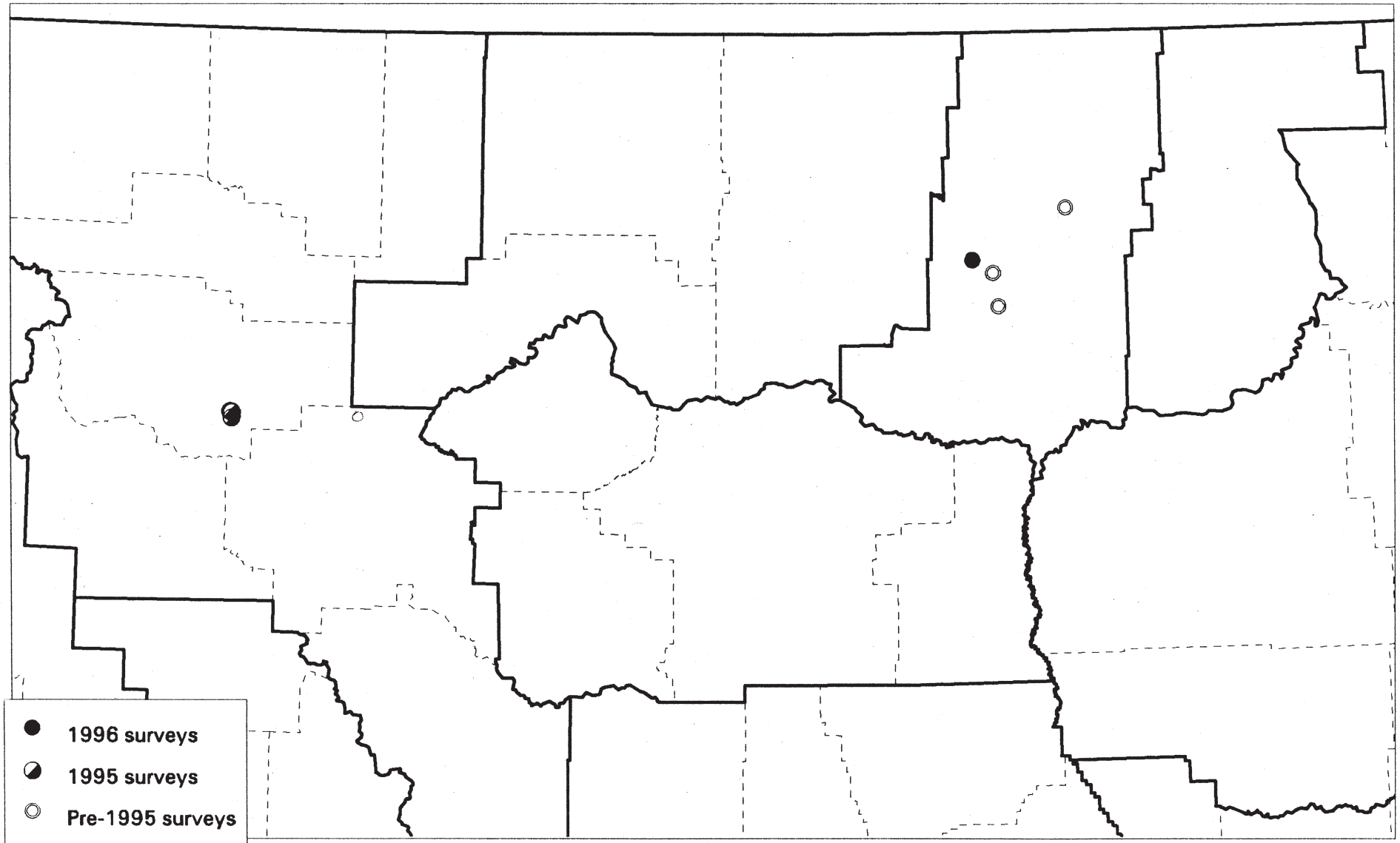
## **A P P E N D I X 2**

### **Maps of Observations of TES Colonial Nesting Birds\*, Bureau of Land Management, Lewistown District, June - July, 1996.**

- 1. Black-crowned Night Heron**
- 2. Common Tern**
- 3. Forster's Tern**
- 4. Black Tern**

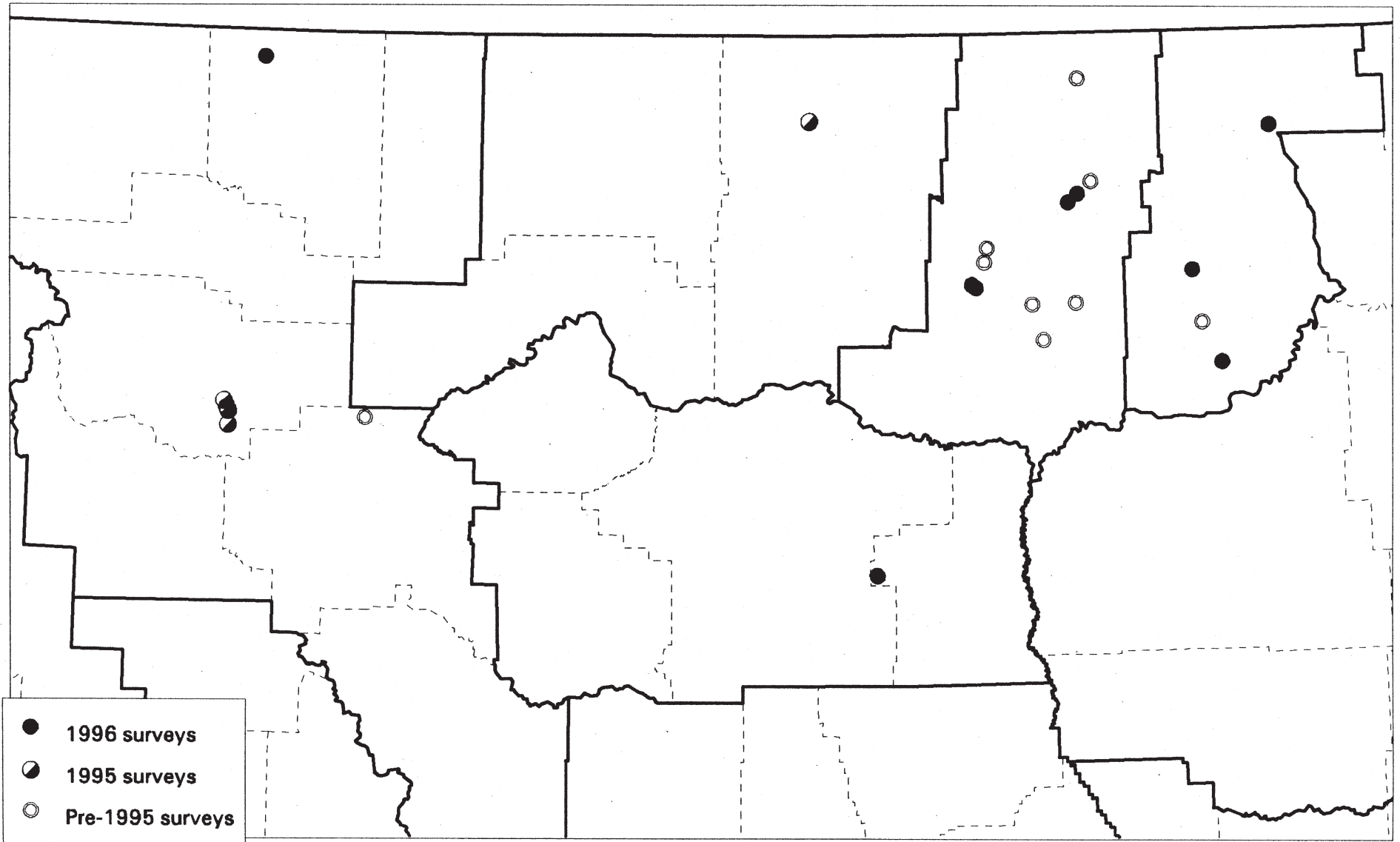
\* Since no additional Black-necked Stilt colonies were located in 1996, a map is not provided here. (see Reichel 1996 for a map of occurrences).

## Observations of Black-crowned Night-Heron on the Lewistown District, BLM



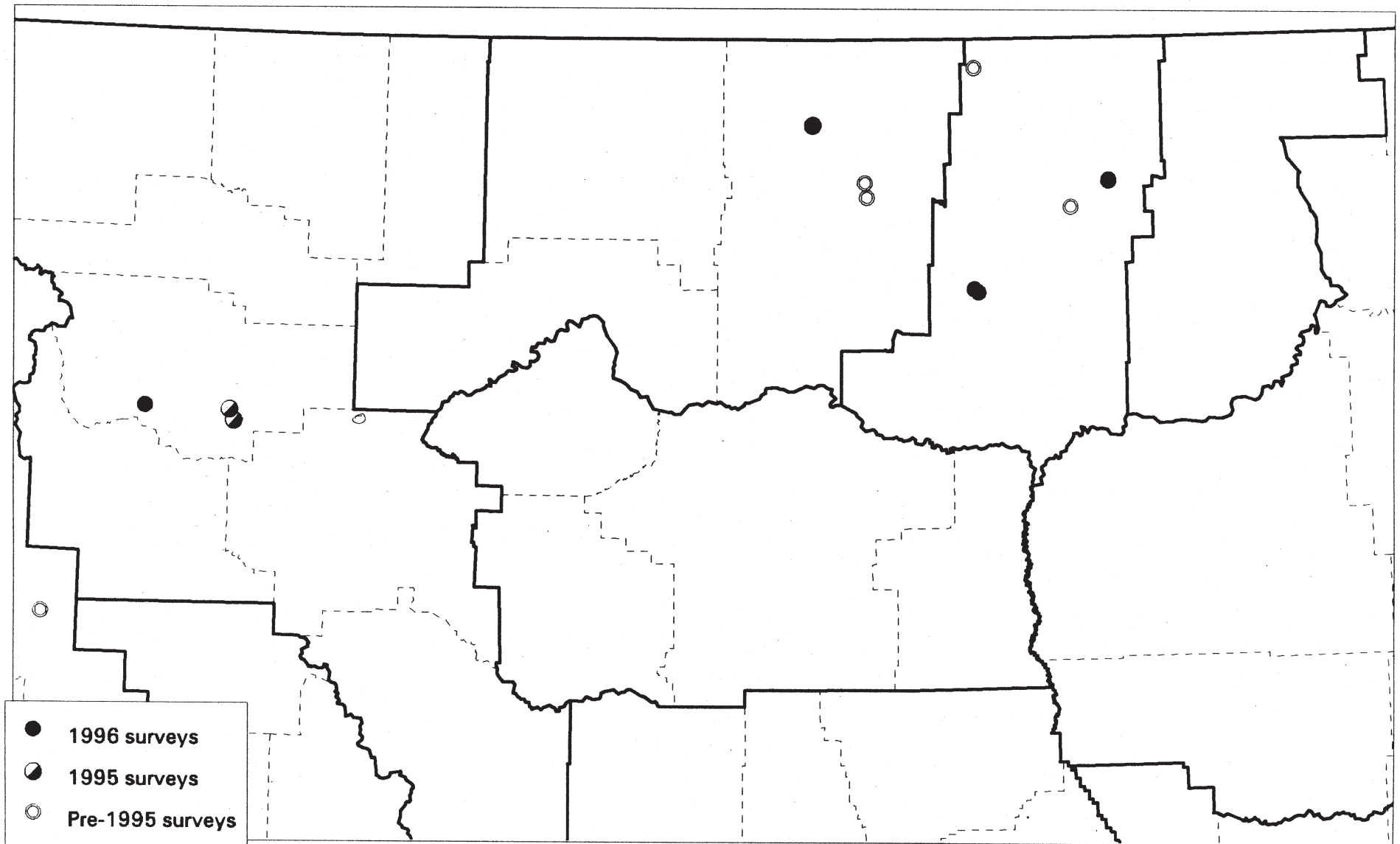
Montana Natural Heritage Program, May 13, 1997

## Observations of Common Tern on the Lewistown District, BLM



Montana Natural Heritage Program, May 13, 1997

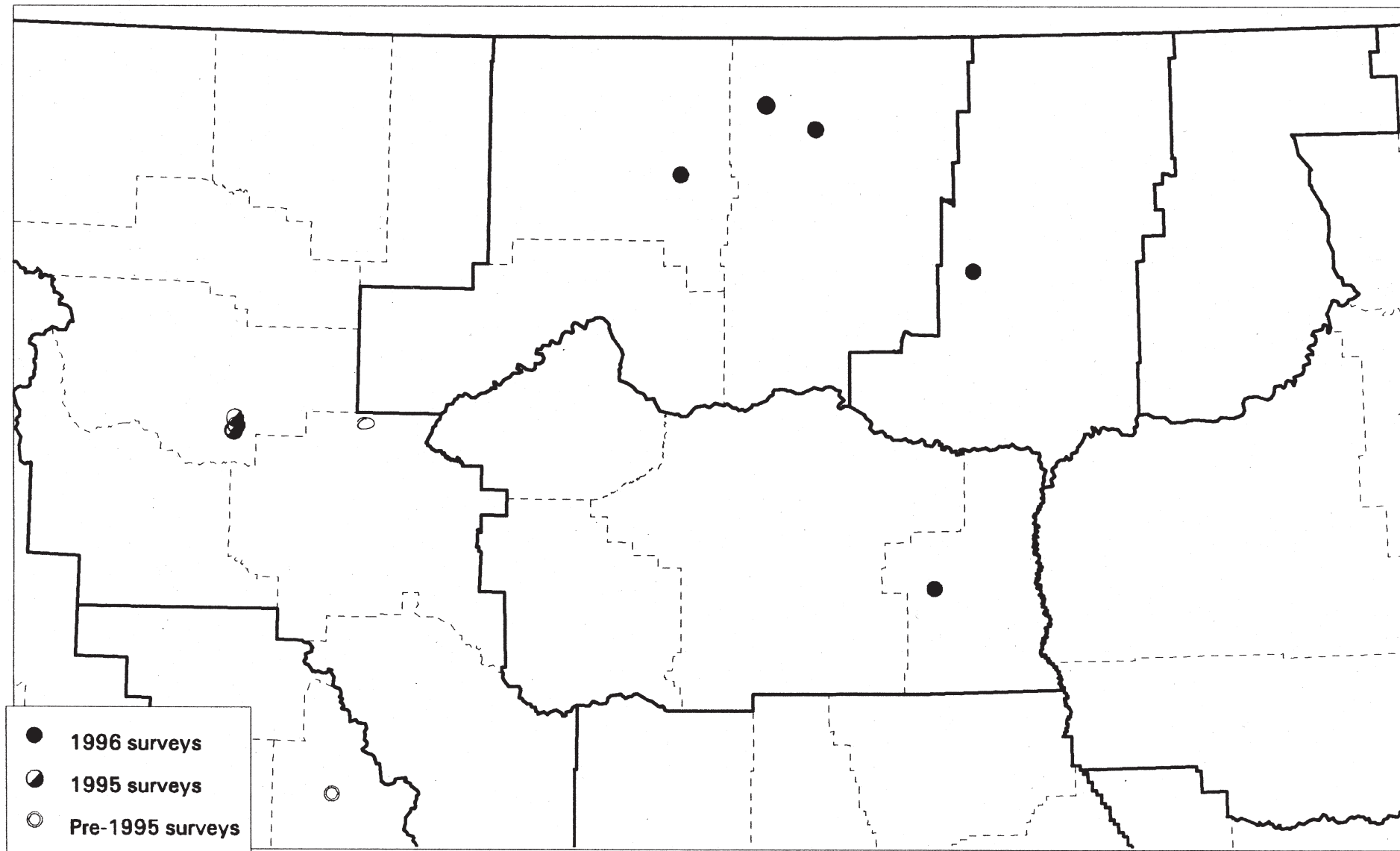
## Observations of Black Tern on the Lewistown District, BLM



Montana Natural Heritage Program, May 13, 1997



## Observations of Forster's Tern on the Lewistown District, BLM



Montana Natural Heritage Program, May 13, 1997